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CHECK-LIST OF THE BIRDS OF TSAVO EAST NATIONAL PARK, KENYA

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INTRODUCTION

In contrast to the large mammals, the bird faunas of East Africa's National Parks are rather poorly known. Williams (1967) provides a species list for most National Parks and several other reserves and the local National Parks organisations have also compiled a list for some. However, neither of these gives details of specific records nor, with a few exceptions any indication of the abundance or occurrence of the species. Also they often disagree. The only Parks for which an annotated list exists are Arusha National Park, Tanzania (Beesley 1972) and Kidepo National Park, Uganda (Elliott 1972).

The purpose of this paper is to collate what is known of the birds of Tsavo East National Park at present. It is mainly based on our collective observations which span eight years. PL was in the Park working intensively on the land-birds from November 1974 till January 1977 and he also did a little mist-netting mostly just outside the Park boundary; WL made observations while working on mammals from November 1968 till May 1976 though doing very little fieldwork after mid 1974; and CS during a study on birds of prey from July 1970 till January 1973 (Smeenk 1974, Smeenk & Smeenk-Enserink 1976). Various other people supplied additional information in response to two requests in the East Africa Natural History Society (EANHS) Bulletin, particularly A.D. Forbes-Watson, who lived in the area in 1959-60 and compiled a preliminary species list in 1967.

THE AREA COVERED

This list refers primarily to the part of Tsavo East National Park south of the Galana River simply because it has been visited most often. This area is hereafter called the 'southern area'—similarly the northern area for the part north of the river (see Fig. 1). But we feel that the list can be taken as representative of a larger area encompassing very broadly the arid bush area from the Tana River in the north to the Mkomasi region of Tanzania in the south and from the coastal more or less evergreen scrub in the east to, approximately, a line drawn from Kibwezi to Voi and then southward. Obviously it will be less reliable near the periphery particularly where this adjoins different habitats for example the coastal scrub.

Outside the southern area of the Park specific areas that have been visited include: 1) the *Commiphora* woodland just to the south and west of the main Nairobi-Mombasa road on either side of Voi. This habitat is similar to that which covered much of the Park when it was gazetted in 1948 (D.L.W. Sheldrick *pers. comm.*). 2) Parts of Galana Ranch—this was visited at intervals by two of us; and

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records were sent by B.R. Heath, who has been living there for some years, and I.S.C. Parker, who lived there in the early 1960s. 3) Parts of the northern area of the Park, notably the Tiva River, Yatta Plateau near Ntharakana, Umbi and Mukomwe. For these and other place names mentioned see Fig. 1.

The list is probably representative, too, of most of the plains area of Tsavo West National Park. However, certain areas of this Park differ considerably and harbour many extra species e.g. the Chyulu Hills and Lake Jipe. Also we do not refer to the migrants that are attracted, often in very large numbers, to the lights of Ngulia Safari Lodge under some weather conditions (Pearson & Backhurst 1976).

In response to requests we also received a number of records from Bushwhackers Safari Camp, just to the north-west of Tsavo East. However, since none of us is familiar with the area and a specific study is being carried out there by D.E. Pomeroy we have decided not to include it in the present list.

CLIMATE

The most important element, as in all semi-arid and arid areas, is rainfall. In general Tsavo East has two rainy seasons—mid November to late December (short rains) and mid March to early May (long rains). Unlike much of the rest of Kenya it is the former that is the more reliable (Tyrell & Coe 1974); indeed in several recent years the long rains have largely failed. Moreover, rainfall may vary substantially in both time and space particularly from isolated thunderstorms. Park headquarters at Voi receives about 450-500 mm of rain per annum (though recently it has been somewhat less), about half falling in each rainy season. This total decreases fairly sharply to the east, to about 250 mm p.a. at Aruba, and increases again between Sala and the coast.

Mean maximum and minimum temperatures vary from about 34°C and 21°C respectively in March to 28°C and 17°C in August (see Fig. 2 of Leuthold 1977c).

THE HABITATS

(a) Land habitats

Greenway (1969) published a check-list of the plants of Tsavo East based on collections, mainly from the southern area, and also gave a general description of the vegetation types. However, Pratt Greenway & Gwynne (1966) proposed a more general system of vegetation classification based on canopy cover and this is used here.

The area we are considering falls entirely into Pratt *et al.*'s ecological zone V which is characterised by an arid climate with "the woody vegetation being dominated by *Commiphora*, *Acacia* and allied genera, often of shrubby habit". Within this are several physiognomic types, and the most important of those extant in Tsavo East today are as follows. The nomenclature of plant species mentioned in this paper follows that of Flora of Tropical East Africa (1952—in progress); Gillett & MacDonald, A Numbered Check-list of Trees, Shrubs and Noteworthy Lianes Indigenous to Kenya (1970); and Agnew, Upland Kenya Wild Flowers (1974).

(i) *Woodland/woodland thicket (trees >20% canopy cover, cover of bushes variable)*

This is the thickest habitat except for small patches of riverine forest. There is an open canopy usually at 7-8 m, though in places up to 10 m above the ground. The trees are predominantly *Commiphora* spp. and *Acacia* spp. (mostly *A. tortilis* and *A. thomasi*) with several other species interspersed, especially *Lannea alata*, *Boswellia hildebrandtii* and *Sterculia* spp. The bush layer is variable from almost none to nearly impenetrable thickets with *Grewia* spp. and in places *Sansevieria ehrenbergii* prominent. Grasses are usually sparse.

When the Park was gazetted this was the predominant vegetation type. However, south of the Galana River this habitat now exists only outside the Park boundary. But in the northern area and beyond large tracts of it still remain, though they may have been thinned out locally. In the southern area and to a lesser extent elsewhere, elephants *Loxodonta africana* and fires have opened it up and sometimes modified it very considerably leaving a range of habitats described in the next section. For further details and references to these changes see Leuthold (1977a, 1977c).

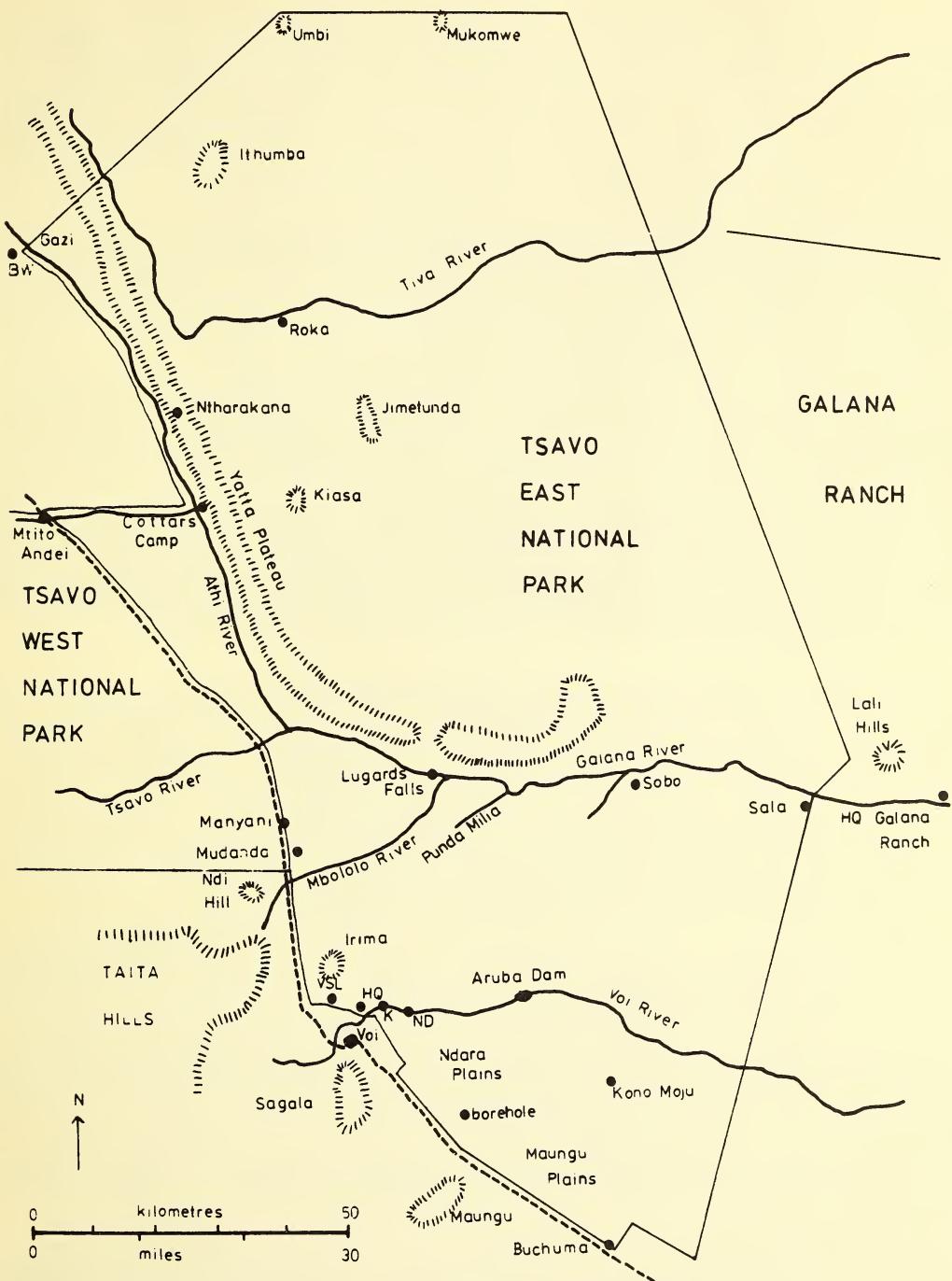


Fig. 1: Map of Tsavo East National Park, showing the places mentioned in the text. VSL—Voi Safari Lodge; HQ—Park headquarters; K—Kanderi; ND—Ndololo; BW—Bushwhackers Safari Camp; —— Park boundary; - - - Nairobi to Mombasa road and railway.

(ii) Main habitats now in the Park

Although there have always been more open areas in the original woodland many, if not most of the habitats now present in the Park are derived from the latter by destruction of trees. The elephants seem to like *Commiphora* spp. and *Acacia* spp. especially, and as a result these species have been the first to be killed or damaged. The dominant species of trees are now *Delonix elata*, *Melia volkensii*, and *Platycelyphium voense* (Leuthold 1977a). Hardly anywhere in the southern area do they reach more than 5-10% canopy cover, and are usually less than 2%. However, they are very important for birds.

The opening up of the tree canopy has benefited many species of shrubs which are now the dominant woody plants in most areas though thickets have also been modified by the elephants. Dominant species now include *Premna* (2 spp.), *Erythrocycla spectabilis*, *Bauhinia taitensis*, and especially *Sericocomopsis* (2 spp.) which may occur in extensive nearly pure stands. Other locally important species are *Boscia coriacea* which may grow to 5-6 m as a small tree, *Thylachium thomasi* and *Carphalea (Dirichletia) glaucescens*. Grasses too have increased and, in a few places, may reach 75% cover though more usually 25-50%. Prominent genera include *Aristida*, *Brachiaria*, *Cenchrus*, *Chloris*, *Digitaria*, *Eragrostis*, and *Panicum*.

Habitats range from open grassland (<2% cover of trees and bushes) to wooded bushland (trees 2-20%, bushes >20%). However, the habitat in large parts of the southern area is bushed grassland (trees <2%, bushes 2-20%). In general the vegetation is denser in the western parts with higher rainfall than in the eastern. Near permanent water it may become very open due to heavy grazing and trampling by mammals. Grassland with no bushes is rare and almost restricted to alluvial deposits such as near Irima Hill.

The northern area has, in general, denser vegetation especially away from the Galana and Tiva Rivers. Also there are some areas with a rather different species composition including for example *Terminalia orbicularis* and *Cassia abbreviata*. Finally along the western side of the Park and especially on the Yatta Plateau the baobab *Adansonia digitata* may be important locally though many have been damaged or eliminated by elephants.

(iii) Riverine vegetation

The upper parts of the Voi River supports a small area of riverine forest. This has a nearly closed canopy at about 20 m with *Newtonia hildebrandtii*, *Dobera glabra*, *Kigelia africana*, and *Ficus* spp. as dominants. The undergrowth too, may be very thick with e.g. *Capparis*, *Salvadora*, *Azima* and *Pluchea* spp. East of Ndololo this forest thins out to become a fringe of trees.

The Galana and Tiva Rivers are somewhat different. There is hardly more than a fringe of trees along either although before the 1961 floods there was more. There are two main types: *Acacia elatior* fringes and stands of the doum palm *Hyphaene coriacea*. At intervals along both rivers there are also some thickets, consisting mainly of the succulent bush *Suaeda monoica*.

(iv) Other Habitats

Around waterholes there is often a much more luxuriant vegetation than in the surrounding area, both of bushes, especially *Lawsonia inermis*, and grasses.

In the west there are a few rocky hills e.g. Irima, several near Voi, and in the northern area Ithumba, Kiasa, and Jimetunda. They are usually rather thinly covered with bushes and trees often of species not occurring elsewhere (Greenway 1969). They seem particularly attractive to some birds of prey and species that otherwise occur only in thicker habitats.

The top of the Yatta Plateau, too, provides a slightly different habitat type having a very thick bush cover especially in the northern parts.

Finally, a minor but important habitat for breeding swifts and swallows is provided by buildings, mainly near Voi.

(b) Aquatic habitats

The rather few sources of permanent water considerably restrict the distribution of many mammals and some birds in the dry season. Major sources are: 1) the Tsavo, Athi and Galana Rivers; the Tsavo and Galana always flow but the Athi may be reduced to a series of pools at the end of the dry seasons. 2) Aruba Dam; an artificial lake formed by a dam across the Voi River about 30 km east of Voi. 3) Pools along the upper parts of the Tiva River as far east as Roka. Minor sources include pools and

springs in some of the tributaries to the Galana and Athi Rivers and the upper parts of the Voi River; a few springs along the Yatta Plateau artificial waterholes at Voi Safari Lodge; and a few artificially enlarged waterholes south of the Voi River which hold water for much of the dry seasons.

In the rainy seasons the situation changes drastically. Seasonal rivers start to flow the two most important being the Voi and Tiva which may continue well beyond the eastern boundary of the Park. More important for animal dispersal though, are numerous shallow pans which hold water for varying periods after the rains.

SEASONALITY OF THE BIRD FAUNA

Species which breed in the Palaearctic form a very important part of the Tsavo bird fauna. They start to arrive in September (a few waders in August) but large numbers do not usually reach Tsavo before November and their arrival coincides with the onset of the rains. Many species then remain in Tsavo through the northern winter but others leave and evidently move further south after mid January when Tsavo begins to dry out. A return passage starts in mid March and lasts till early May again more or less coinciding with the rainy season. Most passerine migrants are commoner in November-December than in April but for a few, notably the Lesser Grey and Red-backed Shrikes *Lanius minor* and *L. collurio collurio*, the opposite is true.

Seasonal occurrence, however, is not restricted to Palaearctic species. Movements of many African species are equally well-marked and most of them appear to be governed by the rainfall pattern. Species showing pronounced influxes into Tsavo during the rains include many seed-eaters, especially weavers (Ploceidae) and some doves (Columbidae), almost all cuckoos (Cuculidae) and the Golden Pipit *Tmetothylacus tenellus*. Of most of these species, however, a few individuals may be found at any time of year; and because of the often patchy distribution of rainfall the occurrence of them may be very localised.

Most species which breed in the area nest in one or both rainy seasons but some do so in the dry season e.g. the larger birds of prey.

CHANGES IN THE BIRD FAUNA

The habitat changes in the southern area of the Park have resulted in a substantial change in the bird species composition. This will be apparent from the systematic list and will be quantified elsewhere (Lack in prep.). Any future changes will depend largely on vegetation trends, which in turn will depend primarily on rainfall and its effects both on plant growth and on the elephant populations.

THE SYSTEMATIC LIST

Nomenclature and Arrangement—Scientific names and arrangement follow Forbes-Watson (1971). This is the nomenclature used by the National Museum, Nairobi and, with minor modifications, follows White (1965) for non-passerines and Hall & Moreau (1970) for passerines. English names follow Mackworth-Praed & Grant (1957-60) except for *Mirafra pulpa* which these authors treat as conspecific with *M. cantillans*. The Mackworth-Praed & Grant number precedes each species.

Geographic names—These can be located on Fig. 1. For many species the name 'Kanderi' figures prominently. This was a large permanent waterhole in 1968-70 attracting many water-birds. However it silted up in 1971 and it is now a grassy swamp which becomes waterlogged in the rains and is generally much less attractive to birds than previously.

Migrant dates—Only the period when a species occurs regularly is given. In most cases there are odd records before and after this period and if there is no prefix to a month the species occurs throughout. "Winter" refers to the northern winter and in practice primarily November to April (see above).

Breeding—Species which have been recorded breeding in the Park are marked*. For several other species that almost certainly do breed regularly there is only circumstantial evidence (e.g. carrying nest material, copulation) and these are marked +. But even then the total list of breeding species is far from complete.

"Formerly"—Several species have a comment preceded by "formerly" and usually attributed to A.D. Forbes-Watson. In all cases this refers to his period of residence in the area in 1959-60. Other cases are specified.

Specific records—Responsibility for individual records rests with the original observers. "Unusual" records were queried personally and rejected only if the observer expressed doubt. Species which have not been recorded within the borders of Tsavo East National Park are bracketed. With two exceptions, regarding species not otherwise recorded (*Corvus splendens*) or not recently (*Hirundo senegalensis*) which were both seen in April 1977, no records after 31 December 1976 are included.

Abbreviations—The following observers are referred to by their initials only: the three authors (PL, WL, CS), A.D. Forbes-Watson (AFW), W.J. Plumb (WP) and G. Rilling (GR).

A postscript to the paper 'Check-list of the birds of Tsavo East National Park, Kenya' by P.C. Lack, W. Leuthold, and C. Smeenk.

ADDENDUM

It should be noted that, since early 1977 and the end of the collection of records for this paper, there have been heavy rains in Tsavo East N.P., and these, together with a reduction in the numbers of elephants, have led to a considerable growth of the vegetation. Both this growth and the rains themselves are likely to have had effects on the bird species and their numbers, particularly as the rains came after a series of very dry years with little plant growth.

Struthionidae Ostriches

1 *Struthio camelus* Ostrich *

The Somali race *S. c. molymbophanes* is now fairly common all over Tsavo East and to the east of the Park. It has been increasing in the Park since it was gazetted in 1948 (D.L.W. Sheldrick) but has not yet been seen south of the Nairobi-Mombasa railway where it is replaced by the Masai race *S. c. massaicus*. This latter has however been seen four times in the Manyani and Mbololo River area. For breeding information see Leuthold (1977b).

Podicipitidae Grebes

4 *Podiceps ruficollis* Little Grebe

Regular at Aruba November-January; more rarely on seasonal waterholes and recorded in all months except June, August and September.

3 *Podiceps nigricollis* Black-necked Grebe

1 at Mudanda Rock 29.11.68, 1 at Kanderi 24.7.69 (both WL).

Pelecanidae Pelicans

31 *Pelecanus onocrotalus* White Pelican

Regular in small numbers at Aruba (mostly for roosting) and more rarely along the Galana and Voi Rivers. Occasionally occurs in large numbers.

32 *Pelecanus rufescens* Pink-backed Pelican

As *P. onocrotalus* but in smaller numbers.

Phalacrocoracidae Cormorants

25 *Phalacrocorax carbo* Cormorant

Uncommon visitor to Aruba, more in May-August than at other times; 1 at Cottars Camp 7.8.73 (GR).

27 *Phalacrocorax africanus* Long-tailed Cormorant

2 at Kanderi 6.12.68 (WL), 3 at Aruba 21.2.71 (WL), 3 (2 juveniles) on lower Mbololo River 20.2.71 (CS) and 5 there 10.3.71 (WL).

Anhingidae Darters

28 *Anhinga rufa* Darter

1 at Kanderi 27.2.69 (WL), 1 at Aruba 8.3.69, 21.2.71 and 7.3.71 (WL) and 27.3.71 (CS).

Ardeidae Herons

48 *Nycticorax nycticorax* Night Heron

1 at Cottars Camp 27.12.73 (GR), 8 at Aruba 13-18.12.76 (WP).

43 *Ardeola ralloides* Squacco Heron

Rare at Aruba and along the Voi River in any month, most frequent December-February.

42 *Ardeola ibis* Buff-backed Heron (Cattle Egret)

Regular at Aruba October-May. A few seen elsewhere near water and at other times.

45 *Butorides striatus* Green-backed Heron

Uncommon in thick vegetation near water particularly in the Galana River near Sala.

39 *Egretta ardesiaca* Black Heron
2 at Punda Milia 23.6.72 (CS), 1 at Kanderi 21.4.73, 1 at Aruba 12-16.5.73 and 24.12.73, and 2 there 31.12.73 and 12.1.74 (all WL).

37 *Egretta alba* Great White Egret
Regular along rivers and on waterholes all the year.

38 *Egretta intermedia* Yellow-billed Egret
Uncommon on rivers, especially the Galana, at any time though commoner in rainy seasons.

40 *Egretta garzetta* Little Egret
Uncommon at any water all the year.

33 *Ardea cinerea* Grey Heron
Fairly common along the Galana and Voi Rivers all the year.

34 *Ardea melanocephala* Black-headed Heron
Common at Aruba November-March with odd records most other months. During the rains, also, often seen on rivers, seasonal waterholes and in grassy areas.

35 *Ardea goliath* Goliath Heron *
Regular along rivers throughout the year.

36 *Ardea purpurea* Purple Heron
1 at Aruba 4.2.69, 1 at Kanderi 1.1.70, 1 on Galana River 28.8.71 (all WL).

Scopidae Hammerkop

53 *Scopus umbretta* Hammerkop *
Regular along all rivers and watercourses with large trees, in which nests are often obvious.

Ciconiidae Storks

55 *Ciconia ciconia* White Stork
Very variable in numbers. Rare before late December and after March; may occur anywhere.

56 *Ciconia nigra* Black Stork
A few records each year late October-March all from the Galana River or nearby.

58 *Ciconia abdimii* White-bellied or Abdim's Stork
Common November through to mid March often occurring in flocks of 50 and more (maximum several hundred). Does not arrive until the rains break and are commonest at though not restricted to water.

57 *Ciconia episcopus* Woolly-necked or Bishop Stork
Regular in small numbers all the year especially around Voi and the Mbololo River. Can usually be seen at Voi Safari Lodge.

60 *Ephippiorhynchus senegalensis* Saddle-bill or Jabiru
Seen solitarily at waterholes mainly south of the Voi River and is also regular on the Tiva River. May occur at any time.

59 *Anastomus lamelligerus* Open-bill
A few at Aruba all the year but large numbers may be seen there, along the Voi River and on sandbanks in the Galana River November-April.

61 *Leptoptilos crumeniferus* Marabou
Fairly common resident around Voi and Aruba. Rare elsewhere.

62 *Ibis ibis* Wood-Ibis
Regular at Aruba and along the Galana River all the year. Also occurs at water elsewhere during the rains.

Threskiornithidae Ibises, Spoonbills

63 *Threskiornis aethiopicus* Sacred Ibis
Common at Aruba and along the Voi River all the year. Rare elsewhere.

65 *Bostrychia hagedash* Hadada Ibis
10 records (8 of them July-October) 1969-1972 and none after that from the Voi and Galana Rivers (WL); few in Voi River forest 22.4.71 (CS); few near Cottars Camp 7.8.73 and 27.12.73 (GR); few near Sala 1.1.75 (PL).

68 *Plegadis falcinellus* Glossy Ibis
Small groups (up to 8) periodically spend a month or so at Aruba, mainly June-August. Rare elsewhere.

70 *Platalea alba* African Spoonbill
Regular at Aruba and along the Galana River all the year. Rare elsewhere.

Phoenicopteridae Flamingoes

71 *Phoenicopterus ruber* Greater Flamingo
All at Aruba: 1 on 11.9.72 (CS); 1 on 21.9.72 and 3.10.72 (WL); 2 on 22.4.76, a young bird on 8.7.76 (both PL); 17 (mostly young) in August-September 1976 with 10 remaining into November (PL, several observers).

72 *Phoenicopterus minor* Lesser Flamingo
1 at Aruba 2.9.74 (WL); 1 there 21.10.76.(PL).

Anatidae Ducks, Geese

95 *Dendrocygna bicolor* Fulvous Tree-Duck
16 at Kanderi 3.11.69, 1 at Aruba 15.5.70, 12 near Lugard's Falls 12.4.71 (all WL); 1 at Irima 23.4.71, 8

at Kanderi 24.4.72 (both CS); 8 at Aruba 25.5.76 (PL & M. Garnett); 20 at Aruba 4.12.76 (PL & D.J. Pearson).

94 *Dendrocygna viduata* White-faced Tree-Duck
Small flocks (up to 13 seen) occur at Aruba periodically. Occasionally at other waterholes.

99 *Alopochen aegyptiaca* Egyptian Goose *
Common wherever there is water. Goslings are often seen even on seasonal waterholes. May occur in some numbers at Aruba (up to 150 recorded).

100 *Plectopterus gambensis* Spur-winged Goose
1 along the Galana River 2.4.71 (WL) and 7.4.71 (P.L. Britton); 3 at Kanderi 19.6.71 and 29.6.71, 1 at Kono Moju 8.2.74 (all WL).

98 *Sarkidiornis melanotos* Knob-billed Goose
Occurs at any water, almost all records being soon after rain.

86 *Anas penelope* Wigeon
2 December and 8 January records in 4 different winters at Aruba and/or Kanderi (WL and PL) (see Leuthold 1973b).

85 *Anas strepera* Gadwall
1 (female) near Aruba 24.12.73 (WL) (see Leuthold & Leuthold 1974).

87 *Anas crecca* Teal
1 seen three times on Ndara Borehole 7-24.1.71 (CS); 1 (female) on a waterhole 12 km north-east of Park HQ 22.1.74 (WL) (both records in Leuthold & Leuthold 1974).

89 *Anas capensis* Cape Wigeon
1 at Aruba 7.11.71 (CS).

92 *Anas acuta* Pintail
Seen in most winters at Aruba; maximum c. 25 there 12.1.74 and 1.3.74 (WL).

91 *Anas erythrorhynchos* Red-bill
Regular in small numbers (up to 25) at Aruba. Also often on seasonal waterholes.

90 *Anas hottentota* Hottentot Teal
Regular but rare, mainly at Aruba. No records April-June or September.

88 *Anas querquedula* Garganey
Regular (up to 50 at a time) at Aruba late October-mid April. Also seen on some of the larger waterholes.

80 *Anas clypeata* Shoveler
A few each winter (but WL saw none till December 1973) at Aruba and larger waterholes mostly January-February.

77 *Netta erythrophthalma* Southern or African Pochard
Rare visitor to Aruba and nearby November-February; 1 at Aruba 6.8.72 (WL) and 2 there 23.5.76 (PL & M. Garnett).

78 *Aythya fuligula* Tufted Duck
9 at Aruba 19.1.72 (CS, AFW, & D. Lack) and 9.2.72 (CS)

Accipitridae Vultures, Eagles, Hawks

For fuller accounts of most species of this and the two subsequent families see Smeenk (1974).

108 *Aegypius tracheliotus* Lappet-faced Vulture *
Uncommon resident in all areas. There will often be 1 or 2 at a carcass with other vultures.

109 *Trigonoceps occipitalis* White-headed Vulture *
As for *A. tracheliotus*.

106 *Gyps rueppellii* Ruppell's Griffon
Regular though uncommon visitor to carcasses.

107 *Gyps africanus* White-backed Vulture *
Far outnumbers all other vultures put together. Common everywhere though especially along rivers where it nests.

110 *Neophron percnopterus* Egyptian Vulture
Rare visitor, mostly in the dry season and usually seen near water e.g. Aruba, Voi Safari Lodge.

111 *Neophron monachus* Hooded Vulture
Uncommon visitor to carcasses especially in the west of the Park.

183 *Circus macrourus* Pale Harrier
Regular visitor late October-early April. Usually seen quartering fairly open grassland areas.

182 *Circus pygargus* Montagu's Harrier
As for *C. macrourus* but slightly commoner (based on sightings of males).

184a *Circus aeruginosus* Marsh Harrier
1 or 2 seen in most winters mostly near water December-February.

184b *Circus ranivorus* African Marsh Harrier
3 on Ndara Plains 18.1.75 (PL); 1 at Aruba 5.1.76 (PL & D.J. Pearson).

185 *Polyboroides typus* Harrier Hawk
Sporadic visitor at any time. Most records are from close to Voi.

159 *Terathopius ecaudatus* Bateleur *
Common resident. Numbers are augmented considerably January-March by non-breeding migrants. May occur almost anywhere.

155 *Circaetus beaudouini* Beaudouin's Harrier-Eagle
1 near Aruba 22.11.72 and 30.11.72 (photographed, CS).

154 *Circaetus pectoralis* Black-chested Harrier-Eagle
Can occur in any month though commonest December-February. Always uncommon and prefers open wooded and bushed grassland.

153 *Circaetus cinereus* Brown Harrier-Eagle
Fairly common resident usually seen perched on top of a tree in open country.

156 *Circaetus fasciolatus* Southern Banded Harrier-Eagle
1 in Voi River forest 12.3.71 (photographed, CS).

177 *Accipiter tachiro* African Goshawk
1 specimen in the Education Centre at Voi with no data. 1 near Ndi 27.10.70, 1 at Irima 3.1.72, and 1 near Voi 31.3.72 (all CS).

176 *Accipiter badius* Shikra
Uncommon visitor November-April. Occurs most frequently in thicker habitats near water. 1 by Voi River 24.7.71 (CS).

179 *Melierax poliopterus* Pale Chanting Goshawk *
Common resident occurring almost everywhere (see Smeenk & Smeenk-Enserink 1976).

178 *Melierax gabar* Gabar Goshawk *
Fairly common resident in thick habitats; sporadic elsewhere. Both normal and melanistic forms occur though the former is more common. See also Smeenk & Smeenk-Enserink (1976).

150 *Kaupifalco monogrammicus* Lizard Buzzard
Sporadic visitor to the Voi River.

158 *Buteastur rufipennis* Grasshopper Buzzard
Fairly common visitor from the start of the November rains till April, usually in the more open habitats.

166 *Buteo rufinus* Long-legged Buzzard
1 by the Voi River east of Aruba 13.2.72, 2 at Irima 21.2.72 (both CS, see Smeenk 1974 p. 15).

167 *Buteo rufifuscus* Jackal (Augur) Buzzard *
1 to 3 resident pairs near the hills around Voi and probably occurs around many of the other rocky hills in the west of the Park.

163 *Buteo buteo vulpinus* Steppe Buzzard
Regular though rare late October-March and seen mostly near the hills around Voi.

149 *Lophoetaetus occipitalis* Long-crested Hawk-Eagle
Irregular sporadic visitor mostly November-April.

146 *Polemaetus bellicosus* Martial Eagle *
Fairly common resident occurring in most areas though commoner near large trees which it uses for nesting June-October.

145 *Hieraetus pennatus* Booted Eagle
Rare migrant November through to March to any area but particularly along the western edge of the Park near the hills.

143 *Hieraetus spilogaster* African Hawk-Eagle *
Uncommon resident in areas of thick bushes with trees especially along watercourses. Has probably decreased considerably in recent years.

137 *Aquila heliaca* Imperial Eagle
1 immature north of Aruba 26.1.72 (CS, see Smeenk 1974 p. 16).

139 *Aquila rapax belisarius* Tawny Eagle *
Fairly common resident. May be seen almost anywhere.

138 *Aquila rapax orientalis* Steppe Eagle
Common everywhere late October-early April, especially in the rains and then often attracted to termite swarms.

136 *Aquila verreauxii* Verreaux's Eagle (* Maungu)
A pair is seen fairly regularly around the hills near Voi. Also a pair near Ntharakana, and probably occurs at intervals around many of the rocky hills in the west of the Park.

142 *Aquila wahlbergi* Wahlberg's Eagle *
Fairly common breeding visitor and passage migrant mid August-May. Odd records in June and July.

160 *Haliaeetus vocifer* African Fish Eagle *
A few resident pairs by permanent water especially Aruba and the Galana River. Sometimes at seasonal waterholes during the rains.

132 *Milvus migrans* Kite
Fairly common along the Nairobi-Mombasa road and in and around Voi (elsewhere uncommon) October-March. Very few records at other times. The African race *M. m. parasitus* has been positively identified (CS). (1 of the Palaeoarctic race *M. m. migrans* seen near Voi 8.12.77 (P.L. Britton).)

133 *Elanus caeruleus* Black-shouldered Kite +
Regular but uncommon; most records are from the west of the Park and November-March.

131 *Elanus riocourii* Swallow-tailed Kite
4 half-way between Voi and Aruba 12.2.71 (CS); 1 half-way between Aruba and Sobo 23.12.76 (PL & D. Schmidl).

134 *Macheiramphus alcinus* Bat-eating Buzzard
Seen near Park HQ several times July-August 1970 (CS, once by WL); 1 at Cottars Camp 21.9.73 (GR). It occurred regularly in *Euphorbia robecchii* trees especially near the Galana River in the early 1960s (I.S.C. Parker) but these have decreased and there is only one recent record (and this only probable) near Sobo in July 1976 (S. Trevor).

(186 *Pandion haliaetus* Osprey)

1 flying down the Galana River, seen 10 km east of Sala 30.12.74 (PL).

Falconidae Falcons

129 *Polyborax semitorquatus* Pigmy Falcon *
 Common resident almost everywhere.

113 *Falco biarmicus* Lanner
 Resident in very small numbers. Influxes may occur especially when termites are swarming and/or large flocks of *Quelea quelea* are present, mainly November-March.

112 *Falco peregrinus* Peregrine *
 Seen sporadically all the year; 1 or 2 resident pairs near the hills of Voi and Maungu. Most records December-May suggesting the presence of Palaearctic migrants.

(114) *Falco fasciinucha* Taita Falcon)
 1 possible near Kanderi 11.6.76 (PL, see Lack 1976); 1 possible near Voi 27.12.73 (E. Bengtsson).

(116) *Falco cuvieri* African Hobby
 Seen several times near Lali Hills in the rains 1960-62 (I.S.C. Parker).

115 *Falco subbuteo* (European) Hobby
 Regular passage migrant especially in spring (April nearly exclusively). A few November records.

118 *Falco concolor* Sooty Falcon
 1 female collected Lali Hills 20.11.60 (I.S.C. Parker); 1 near Kanderi 13.11.69 (WL); 1 near Mtito Andei 27.4.76 (PL); 1 probable near Voi 22.12.72 (J. Squire).

122 *Falco chicquera* Red-necked Falcon
 1 by the Galana River between Sala and Sobo 17.6.69 (WL).

120 *Falco anurensis* Eastern Red-footed Falcon
 Occurs in small but variable numbers (occasionally large flocks on migration) November-December and April.

126 *Falco naumannii* Lesser Kestrel
 Regular but uncommon visitor in variable numbers mainly to open areas mid December-March.

123 *Falco tinnunculus* Kestrel
 Fairly common November-April which suggests they are Palaearctic birds. Only 1 record outside these dates, near Irima 24.6.75 (PL).

Sagittariidae Secretary Bird

103 *Sagittarius serpentarius* Secretary Bird *
 Resident in small numbers, usually in areas with plenty of grass. Possibly an influx November-April.

Phasianidae Game Birds

There seems to have been a marked decrease in numbers of resident species in recent years and this cannot be wholly explained by the habitat changes.

195 *Francolinus sephaena* Crested Francolin *
 Fairly common resident in woodland, less so in riverine vegetation, and less still in other thick habitats.

203 *Francolinus hildebrandti* Hildebrandt's Francolin
 Resident on the rocky hills around Voi. Also occurs on other rocky hills.

210 *Francolinus leucoscepus* Yellow-necked Spurfowl *
 Resident; now almost confined to riverine vegetation and other damper areas, though it is more widespread in the rains.

212 *Coturnix delegorguei* Harlequin Quail *
 Very common during and shortly after the short rains. Reappears in small numbers in April. Occurs in all but the thickest habitats.

Numididae Guinea-Fowl

The same general comment as for Phasianidae applies.

215 *Numida meleagris* Helmeted Guinea-Fowl *
 Fairly common resident in woodland and rare in other thick habitats.

218 *Guttera pucherani* Kenya Crested Guinea-Fowl
 Formerly occurred regularly along the Voi River especially at Ndololo. Last seen in November 1973 (WL).

219 *Acryllium vulturinum* Vulturine Guinea-Fowl *
 A large flock lives around Park HQ. Scarce elsewhere in thick habitats.

Turnicidae Button-Quails

365 *Turnix sylvatica* Button-Quail *
 Visitor in variable numbers during the rains, especially when these are good. Confined to areas with high grass cover.

367 *Ortyxelos meiffrenii* Quail Plover
 Resident in small numbers throughout the area though not seen in woodland. It has probably been extending its range recently (Lack 1975b).

Gruidae Cranes

245 *Balearica pavonina* South African Crowned Crane
Sporadic visitor to waterholes. Most records January-May.

Rallidae Crakes, Rails

224 *Crex egregia* African Crake
1 at Kanderi 25.6.72 (CS).
225 *Limnocorax flavirostra* Black Crake
Sporadic visitor to the Voi River when the water is flowing.

Helioornithidae Finfoots

(243 *Podica senegalensis* Peter's Finfoot)
Seen twice on the Galana River near the HQ of Galana Ranch (B.R. Heath).

Otididae Bustards

250 *Otis kori* Kori Bustard
Rare visitor to open grassy areas.
252 *Neotis heuglini* Heuglin's Bustard
1 near Sala 17.6.69 (WL); seen once on the Tiva floodplain on Galana Ranch in the early 1960s (I.S.C. Parker).
257 *Eupodotis ruficrista* Crested Bustard +
Very common resident in all habitats except open grassland, preferring thicker ones.
256 *Eupodotis senegalensis* White-bellied or Senegal Bustard
Uncommon resident mainly in open grassland.
(258 *Eupodotis melanogaster* Black-bellied Bustard)
Records of this species probably refer to *E. hartlaubii*.
259 *Eupodotis hartlaubii* Hartlaub's Bustard
Resident in small numbers in more open habitats.

Jacanidae Jacanas

264 *Actophilornis africanus* Jacana
Occasional visitor to water e.g. Aruba.

Rostratulidae Painted Snipes

297 *Rostratula benghalensis* Painted Snipe
Sporadic visitor to the Voi River and large waterholes mainly in the rains.

Charadriidae Plovers

287 *Vanellus armatus* Blacksmith Plover
1-2 seen 5 times June-November 1972 and 4 times April-June 1973 at Aruba and/or Kanderi (WL); several at Aruba 4.11.72 (CS); 1 at Cottars Camp 7.8.73 (GR).
286 *Vanellus spinosus* Spur-winged Plover *
Several resident pairs at Aruba and on the Tiva River. Rare elsewhere. May be a recent arrival as all WL's records are after August 1972 except for 2 in 1971.
292 *Vanellus tectus* Blackhead Plover *
Fairly common resident in dry areas with open ground.
282 *Vanellus lugubris* Senegal Plover
Sporadic visitor to any area, almost all June-August.
281 *Vanellus coronatus* Crowned Plover *
Fairly common resident occurring only in more grassy areas where it is more common than *V. tectus*.
Plovers calling at night are probably all this species.
278 *Pluvialis dominicus* Eastern Golden Plover
2 at Aruba 5.1.76 (PL & D.J. Pearson).
279 *Pluvialis squatarola* Grey Plover
1 at Aruba 14.11.73 (WL).
266 *Charadrius hiaticula* Ringed Plover
A few are resident at Aruba through the winter (records August-May). Also on waterholes and the Galana River.
267 *Charadrius dubius* Little Ringed Plover
Sporadic visitor to water mainly November-February.
271 *Charadrius pecuarius* Kittlitz's Sand-Plover *
Resident in small numbers at Aruba with fewer on the Galana and Tiva Rivers. Occasionally at seasonal waterholes.
272 *Charadrius tricollaris* Three-banded Plover *
Very few resident at Aruba. Commoner on pools and the Galana River and is often on roads.
268 *Charadrius marginatus* White-fronted Sand-Plover
1 at Kanderi 1.6.71 (CS); 1 along Galana River 3.7.73 (WL); 1 at Aruba 23.1.75 (D.A. Turner); up to 6

at Aruba 7-21.6.76 (PL).

274 *Charadrius mongolus* Mongolian Sand-Plover
6 records at Aruba and other water late August-late November.

277 *Charadrius asiaticus* Caspian Plover
Fairly common visitor, usually in small flocks though up to 200 seen (Aruba airstrip 24.2.75 (PL)), September-March. Occurs primarily in very open areas especially to the south and east of Aruba.

Scolopacidae Waders

These are common winter visitors in Africa, but some individuals of many species can be found throughout the Palaearctic summer. In Tsavo this is especially true of *Tringa nebularia*, some of which can be found every year in June and July.

318 *Tringa nebularia* Greenshank
Fairly common at any water all the winter. See above.

317 *Tringa stagnatilis* Marsh Sandpiper
Regular all the winter though never in large numbers. Can occur at any water. Seems to arrive later than most other regular waders with only very few before late October.

314 *Tringa glareola* Wood Sandpiper
The commonest *Tringa*. Occurs at all water though not usually in large flocks.

313 *Tringa ochropus* Green Sandpiper
Rather scarce all the winter and prefers small waterholes or small watercourses. Most October-December.

312 *Tringa hypoleucus* Common Sandpiper
Regular in small numbers all the winter, but especially so on autumn passage where it is one of the first migrants to arrive back, being fairly common in August.

316 *Tringa erythropus* Spotted Redshank
Seen in small numbers December-March. Seems to prefer isolated waterholes.

311 *Tringa terek* Terek Sandpiper
1 at Aruba 4.11.72 and 11.11.72 (CS), 2 there 5.11.72 (WL & CS) (see Leuthold 1974); 1 at Aruba 4.10.76 and 1.11.76 (PL).

299 *Gallinago media* Great Snipe
1 at Aruba 1.11.72 (CS); 1 there 13-18.12.76 (WP).

298 *Gallinago gallinago* Common Snipe
Occurs in small numbers in reedy swamps November-March. This being the only period they are seen, they are usually assumed to be this species and not *G. nigripennis*; 2 at Aruba 5.1.76 were certainly *G. gallinago* (D.J. Pearson).

303 *Calidris ferruginea* Curlew Sandpiper
Mainly seen at Aruba or the Galana River on autumn passage (August-October) though a few may remain all the winter till May.

305 *Calidris minuta* Little Stint
Very common at any water all the winter though large numbers do not arrive at Aruba before November.

308 *Calidris alba* Sanderling
1 at Aruba 2.11.72 and 3 there 19.11.72 (both WL); 1 at Aruba 20.9.76 and 4.10.76 (PL),

309 *Philomachus pugnax* Ruff
As for *Calidris minuta*.

319 *Limosa limosa* Black-tailed Godwit
1 at Aruba 3.11.69 and 8.11.69, 1 at Kanderi 1.1.70 and 7.1.70, 2 at Aruba 5.11.73 (all WL); 2 at Aruba 9.9.76 (PL); 1 at Aruba 15-17.12.76 (WP).

Recurvirostridae Stilts, Avocets

296 *Himantopus himantopus* Black-winged Stilt *
Occurs in small numbers all the year; larger numbers occur especially at Aruba October-March with up to 100 recorded there after mid December.

295 *Recurvirostra avosetta* Avocet
3 at Aruba 7.11.71 (CS); 1 there 5.11.72 and 2 there 19.11.72 (WL); 1 there October-November 1976 (PL). The dates suggest they are Palaearctic birds.

Phalaropidae Phalaropes

323 *Phalaropus lobatus* Red-necked Phalarope
1 at Aruba 4.10.76 (photographed, PL).

Burhinidae Thicknees

262 *Burhinus capensis* Spotted Thicknee
Scarce resident usually in thick habitats. Rarely seen by day.

263 *Burhinus vermiculatus* Water Thicknee
Local resident along the Tsavo, Athi and Galana Rivers. Not seen elsewhere.

Glareolidae Coursers, Pratincoles

325 *Cursorius cursor* Cream-coloured Courser
Sporadic visitor. All records are east of Aruba and usually singles. Were seen "fairly frequently" on

Galana Ranch October-March in the early 1960s (I.S.C. Parker).

326 *Cursorius temminckii* Temminck's Courser +
Uncommon visitor to open plains mainly to the east of or at Aruba and mainly April-October especially May and June.

327 *Cursorius africanus* Two-banded Courser
1 near Mtito Andei 27.12.73 (GR).

328 *Cursorius cinctus* Heuglin's Courser
Fairly common resident though rarely seen unless flushed at one's feet. Occurs in all habitats except open grassland.

329 *Cursorius chalcopterus* Violet-tipped Courser
Rarely seen on the roads at night; most records December-May.

330 *Glareola pratincola* Pratincole
Occurs sporadically at Aruba December-April; maximum together 15-20 there 19.2.71 (CS).

Laridae Gulls, Terns

345 *Larus ridibundus* Black-headed Gull
Records at Aruba: 2-4 on 11-19.1.72 (WL & CS), 1 on 21.12.72 (CS), 5-6 on 30.12.72, 1 on 3.1.73 and 4-5 on 1.3.74 (all WL). Also 1 at Mudanda Rock 5.1.73 (WL).

340 *Larus fuscus* Lesser Black-backed Gull
1 adult and 1 immatur at Aruba 20.11.75 (PL).

349 *Sterna nilotica* Gull-billed Tern
A few records of single birds mostly at Aruba and mainly October-November.

362 *Sterna hybrida* Whiskered Tern
4 in breeding plumage at Aruba 22.11.74 (PL); at least 3 there 4.12.76 (D.J. Pearson). See under next species.

361 *Sterna leucoptera* White-winged Black Tern
"Marsh Terns" occur regularly in small numbers at Aruba all the winter but are more numerous (rarely more than 10 together) December-April. They are assumed to be predominantly *S. leucoptera* though some *S. hybrida* certainly occur (see above). In April some *S. leucoptera* can be seen in various stages of moult into breeding plumage.

Rynchopidae Skimmers

364 *Rynchops flavirostris* African Skimmer
1 at Kanderi 27.5.71 (WL).

Pteroclidae Sandgrouse

369 *Pterocles exustus* Chestnut-bellied Sandgrouse
Seen at intervals along the Nairobi-Mombasa road (AFW) and occasionally on Galana Ranch (B.R. Heath). A small influx (with flocks up to 22) occurred mainly to the south of the Voi River June-October 1976 (PL).

370 *Pterocles decoratus* Black-faced Sandgrouse *
Very common resident over the whole area. In the dry season, concentrations at water may be spectacular especially at and just to the west of Roka.

Columbidae Pigeons, Doves

379 *Columba guinea* Speckled Pigeon
3 near Ndololo 9.4.70 (WL).

386 *Streptopelia semitorquata* Red-eyed Dove +
Fairly common resident in woodland and along major rivers.

387 *Streptopelia decipiens* Mourning Dove
Fairly common resident along rivers where there is a fringe of trees especially *Acacia elatior* but not in riverine forest.

388 *Streptopelia capicola* Ring-necked Dove *
Very common resident everywhere.

392 *Streptopelia senegalensis* Laughing Dove *
In small numbers all the year mainly near to water. A very large increase occurs in January-February.

393 *Oena capensis* Namaqua Dove *
Very small numbers can be found at all times especially at e.g. Aruba. Increases considerably in the 2-3 months after the short rains.

394 *Turtur tympanistria* Tambourine Dove
Formerly occurred in the Voi River forest (AFW). No recent records.

397 *Turtur chalcostipus* Emerald-spotted Wood-Dove +
Common resident in woodland, and along the Voi River; and less so in other thick habitats.

401 *Treron australis* Green Pigeon
Formerly occurred sporadically along the Voi River (AFW). No recent records.

Psittacidae Parrots

448 *Poicephalus rufiventris* Orange-bellied Parrot *

Fairly common resident in thicker habitats usually with large trees especially baobabs.

Musophagidae Turacos

434 *Tauraco porphyreolophus* Violet-crested Turaco
 Formerly occurred in riverine trees e.g. along the Mbololo River (AFW) No recent records.

440 *Corythaloïdes leucogaster* White-bellied Go-Away-Bird
 Common resident in woodland. Also occurs in riverine fringes and some thick habitats e.g. on the Yatta Plateau.

Cuculidae Cuckoos

413 *Clamator glandarius* Great Spotted Cuckoo *
 Regular in small numbers in thicker habitats October-March especially December-January. 1 June record (PL) and a fledgling seen in April 1976 (Trevor & Lack 1976).

415 *Clamator jacobinus* Black-and-White Cuckoo *
 Fairly common migrant November-January and April-early May with a few in between. Mainly occurs low down in bushes in thicker habitats. A fledgling in February 1977 (Turner 1977).

406 *Cuculus solitarius* Red-chested Cuckoo
 Only recorded November-January and then only in woodland and around Park HQ.

407 *Cuculus clamosus* Black Cuckoo
 Heard rarely (hardly ever seen!) in woodland November-February; 1 at Voi River 20.2.71 (CS).

404a *Cuculus canorus canorus* European Cuckoo
 Fairly common migrant December-January and especially April. May occur in any habitat preferably with trees.

404b *Cuculus canorus gularis* African Cuckoo
 Fairly common in thicker habitats, mainly November-January. Also rarely in April.

(405) *Cuculus poliocephalus* Lesser Cuckoo
 2 adults (grey form) at Voi in April 1976 (J.G. Williams).

418 *Chrysococcyx klaas* Klaas' Cuckoo
 Heard fairly often (seen rarely) in all thicker habitats. Commonest in the rains but can be seen at any time of year.

417 *Chrysococcyx caprius* Didric Cuckoo
 Common everywhere November-January and a few April-May (numbers fluctuate with the amount of rain). Rare in the dry seasons.

416 *Chrysococcyx cupreus* Emerald Cuckoo
 1 male calling (and seen) Voi River forest 19.11.74, 1 female at Ndololo 9.12.75 (both PL).

424 *Ceuthmochares aereus* Yellow-Bill
 1 in Voi River forest 21.11.74 (PL); 1 at Roka 11.11.75 (PL & WL). Seen fairly often in thickets near Sala (B.R. Heath, once by F. Alexander).

423 *Centropus superciliosus* White-browed Coucal *
 Occurs in thick bushes along all watercourses. At least some are resident but is much more prominent in the rains.

Tytonidae Barn Owls

528 *Tyto alba* Barn Owl
 1 roosting near Ndara 12.1.72 and soon after (CS). Has occurred in Voi (AFW).

Strigidae Owls

534 *Otus scops* Scops Owl
 Many along the Tiva River (F. Alexander) and is probably fairly common along both the Galana and Voi Rivers though very rarely seen. One is resident at Cottars Camp. Formerly (and up to 1971) it was often heard at night and not only near rivers, but it is certainly not common now near Park HQ.

536 *Otus leucotis* White-faced Scops Owl
 Seen occasionally near Sala (B.R. Heath) and has been seen at Lugard's Falls (AFW).

543 *Bubo africanus* Spotted Eagle-Owl *
 Widespread but scarce resident mainly in thicker habitats. Often rests by day on or near the ground.

544 *Bubo lacteus* Verreaux's Eagle-Owl *
 Uncommon resident especially along rivers and watercourses. Rests by day on the branches of large trees.

538 *Glaucidium perlatum* Pearl-spotted Owlet +
 Common resident everywhere with trees especially along rivers.

Caprimulgidae Nightjars

Fairly commonly seen on the roads at night during the rains, more rarely in the dry seasons. All species are probably migratory to some degree. Most positive records refer to road casualties.

547 *Caprimulgus europaeus* European Nightjar
 Passage migrant, mainly November.

553 *Caprimulgus nubicus* Nubian Nightjar
 1 on road to Voi from the Park 5.3.71 (photographed, CS); 2 seen in the lights of Voi Safari Lodge 28.6.76

(WP); formerly seen fairly often (AFW). 1 collected with an egg at Tsavo River 2.4.34 (Peters & Loveridge 1937) is *C. fossii* (R.M. Paynter in litt.).

548 *Caprimulgus fraenatus* Dusky Nightjar
1 at Irima 2.1.72 (CS); 1 near Voi 7.12.76 and another there 12.12.76 (PL).
552 *Caprimulgus donaldsoni* Donaldson-Smith's Nightjar *
Probably the commonest species occurring in both rufous and grey forms.
556 *Caprimulgus inornatus* Plain Nightjar
1 seen in the hand near Park HQ 27.12.70 (CS); 1 near Voi 18.12.75 (PL).
554 *Caprimulgus tristigma* Freckled Nightjar
Formerly occurred in rocky areas especially domed granite hills e.g. Mudanda Rock and Maungu (AFW).
No recent records.
560 *Caprimulgus fossii* Gabon Nightjar *
2 specimens in Education Centre at Voi, one dated 15.12.58, other undated (identities checked by PL in National Museum). 3 specimens near Voi in January 1975 (PL). Formerly often heard (AFW). See *C. nubicus*.
565b *Caprimulgus clarus* Long-tailed Nightjar
1 specimen in the Education Centre at Voi dated 8.12.58 (identity checked by PL in National Museum). Common on Galana Ranch (B.R. Heath). Formerly often heard (AFW).

Apodidae Swifts

640 *Apus melba* Alpine Swift
Sporadic visitor usually in company with other swifts. Most records in January.
641 *Apus aegitorialis* Mottled Swift
Rarely seen hawking over the Voi River and around Voi.
636 *Apus apus* Common Swift
Fairly large all dark swifts are seen regularly all the Palaearctic winter especially December-February and some can be seen at any time suggesting at least some are resident birds probably *A. barbatus*. Such swifts can be seen at any season in the Taita Hills (PL, AFW).
637 *Apus nianae* Nyanza Swift
4 positive records near the Voi River December-January (PL, D.J. Pearson).
636b *Apus barbatus* Black Swift
No positive records but see above under *A. apus*.
645 *Apus horus* Horus Swift
2 at Maungu 23.10.71 (CS); a few along the Galana and Mbololo Rivers 1.12.76 (R.J. Dowsett).
644 *Apus caffer* White-rumped Swift *
Resident round where it nests in buildings and culverts but may occur anywhere at intervals.
643 *Apus affinis* Little Swift *
Nests commonly on buildings. Resident around these but may be seen anywhere at intervals.
646 *Cypsiurus parvus* Palm Swift *
Common resident wherever there are doum palms. Regular but uncommon away from these.
647 *Telacanthura ussheri* Mottle-throated Spinetail
Several along the Tiva River near Roka 11.11.75 (PL & WL) and it has been seen near Manyani (AFW).
648 *Neafrapus boehmi* Boehm's Spinetail
Has been recorded at Lugard's Falls (AFW).

Collidae Mousebirds

566 *Colius striatus* Speckled Mousebird
Resident in very small numbers but may increase considerably when fruit is ripe notably *Salvadora persica* (August-September). Almost restricted to riverine vegetation.
567 *Colius leucocephalus* White-headed Mousebird
1 about 5 km south of Voi 22.5.76 (PL & M. Garnett), 4 there 22.7.76 (PL); seen at Buchuma (F. Alexander) and formerly regular at Maungu (AFW).
568 *Colius macrourus* Blue-naped Mousebird *
Fairly common resident occurring mainly along rivers and watercourses and in woodland though also often in very dry areas.

Trogonidae Trogons

570 *Apaloderma narina* Narina's Tropic
1 at Park HQ 10.8.76 and was formerly fairly common along the Tiva River (both D.L.W. Sheldrick).

Alcedinidae Kingfishers

465 *Ceryle rudis* Pied Kingfisher
Regular but uncommon resident along the Galana River and its tributaries. Rare elsewhere.
470 *Alcedo cristata* Malachite Kingfisher
Sporadic visitor to suitable water mainly during and after the rains.
471 *Ceyx picta* Pigmy Kingfisher
1 at Ndara 10.5.73 (WL); 1 on Voi River 21.11.74, 1 near Sala 31.12.74, 1 by a waterhole c. 30 km north-east of Aruba 12.4.76 (all PL).
479 *Halcyon chelicuti* Striped Kingfisher

Fairly common resident wherever there are large trees with open ground underneath.

476 *Halcyon albiventris* Brown-hooded Kingfisher
Rare in the Voi River forest. All records are October-May.

477 *Halcyon leucocephala* Grey-headed Kingfisher
Occurs fairly commonly along rivers November-May but may disappear completely June-October as in 1975 (PL) though a few can usually be found all the year.

Meropidae Bee-Eaters

A large number pass fairly high overhead late August-November and April-early May. *Merops apiaster* and both races of *M. superciliosus* are certainly involved but the proportions of each are unknown as the majority are too high for positive identification.

481 *Merops apiaster* Bee-Eater
Passage migrant September-October and April. See above.

482a *Merops superciliosus superciliosus* Madagascar Bee-Eater (*)
Fairly common visitor especially in woodland where it feeds from perches on the pylons December-April. See above. Possibly bred along the Athi River in August 1974 (WL) and 1 feeding fledgling *Indicator indicator* near Sala 5.7.76 (photographed, J. Mulder per CS).

482b *Merops superciliosus persicus* Blue-cheeked Bee-Eater
Rare visitor mainly near to rivers October-March especially after mid January. See above.

484 *Merops nubicus* Carmine Bee-Eater
Sporadic visitor in very small numbers February-March.

486 *Merops albicollis* White-throated Bee-Eater
Visitor, often in fairly large numbers, after rain late October-April.

488 *Merops pusillus* Little Bee-Eater *

Uncommon resident occurring mainly near rivers and watercourses.

491 *Merops revoilii* Somali Bee-Eater
15 years ago only seen north of the Galana River (AFW). Now uncommon resident throughout the area between the Galana and Voi Rivers in any habitat, preferring areas with thick bushes (see Leuthold 1973a). To date only 1 record south of the Voi River (5 km) 6.9.76 (PL).

Coraciidae Rollers

457 *Coracias garrulus* European Roller
Very common mainly in more open areas November-April. Large very loose flocks may be seen moving slowly through at 20-30 m above the ground when there are storms nearby and during spring passage in April.

460 *Coracias caudatus* Lilac-breasted Roller *

Scarce but regular resident wherever there are large trees. A few of the Somali race *C. c. lorti* (apparently non-breeding migrants) may be seen December-March.

461 *Coracias naevia* Rufous-crowned Roller +
Variable in numbers from year to year occurring most commonly March-July. Usually near large trees.

463 *Eurystomus glaucurus* Broad-billed Roller +
Fairly common along the Voi and Tiva Rivers November-May, but appears at other times after rain e.g. late September 1976. Occasional elsewhere near baobabs.

Upupidae Hoopoes

517 *Upupa epops epops/senegalensis* Hoopoe or Senegal Hoopoe
Birds with a white bar on the primaries are rare visitors November-February. Habitat as below.

518 *Upupa epops africana* South African Hoopoe
Partial migrant, mainly in thicker habitats with some bare ground. Regular December-June but rare during the rest of the year.

Phoeniculidae Wood-Hoopoos

519 *Phoeniculus purpureus* Green Wood-Hoopoe or Kakelaar *
Fairly common resident where there are large trees, especially along rivers.

520 *Phoeniculus granti* Violet Wood-Hoopoe
A group along the Tiva River near Roka in February 1969 (F. Alexander), a group along the Galana River in August 1972 (J. Squire) are the only positive records.

527 *Phoeniculus minor* Abyssinian Scimitar-bill *

Fairly common resident, especially in thicker habitats.

526 *Phoeniculus cyanomelas* Scimitar-bill
2 in Voi River forest 18-19.3.69 (WL); 1 at Cottars Camp 27-28.3.76 (GR).

Bucerotidae Hornbills

504 *Tockus nasutus* Grey Hornbill +
Fairly common resident (but seems commoner in the rains) in open areas with some trees though also occurs in thicker habitats. Can occur in drier areas than other *Tockus* species.

505 *Tockus erythrorhynchus* Red-billed Hornbill *
Common resident wherever there are trees.

507 *Tockus deckeni* Vonder Decken's Hornbill *
 Very common resident in woodland but relatively scarce elsewhere. May increase in numbers when there is abundant *Commiphora* fruit, especially July-September.

(508) *Tockus jacksoni* Jackson's Hornbill
 A bird collected on Tsavo River 5.4.34 (Peters & Loveridge 1937) is *T. deckeni* (R.M. Paynter *in litt.*)

506 *Tockus flavirostris* Yellow-billed Hornbill *
 Uncommon resident in woodland; rare in other thick habitats. Formerly common (AFW).

509 *Tockus alboterminatus* Crowned Hornbill
 Seen at intervals in and around the Voi River forest mostly November-March. Occasional elsewhere near rocky hills.

501 *Bycanistes brevis* Silvery-cheeked Hornbill
 1 on Voi River 18.10.69 (WL); a few there 19.2.71 and 12.3.71 (CS); 1 probable (certainly this or *B. buinator*) 10 km east of Sala 12.12.75 (PL). Formerly in Voi River forest (AFW).

515 *Bucorvus cafer* Ground Hornbill
 A few seen at intervals just within the western edge of the Park, along the Voi River. Uncommon along the Nairobi-Mombasa road. Formerly fairly common in many areas (AFW).

Capitonidae Barbets

580 *Lybius melanopterus* Brown-breasted Barbet
 Regular in small numbers in the Voi River forest especially at fruiting trees.

576 *Lybius leucocephalus* White-headed Barbet
 Formerly came to fruiting trees along the Voi River (AFW). No recent records but does occur in the Bura River forest near Taita Hills Lodge.

575 *Lybius torquatus* Black-collared Barbet
 1 at Ndololo 21.12.74 (PL).

583 *Lybius melanoccephalus* Black-throated Barbet *
 Very common resident in woodland, but not seen outside this habitat.

584 *Lybius lacrymosus* Spotted-flanked Barbet *
 Fairly common resident along rivers. Also occurs around Park HQ and very rarely in woodland.

585 *Lybius leucomelas* Red-fronted Barbet
 Formerly rare in dry *Acacia* areas (AFW). No recent records.

594 *Pogoniulus pusillus* Red-fronted Tinker-Bird
 Uncommon resident in woodland, riverine vegetation and near rocky hills; rare elsewhere.

597 *Pogoniulus bilineatus* Golden-rumped Tinker-Bird
 Formerly seen along the Voi River (AFW). No recent records.

603 *Trachyphonus darnaudii* D'Arnaud's Barbet *
 Common resident in all areas with thick bushes but not in riverine vegetation.

601 *Trachyphonus erythrocephalus* Red-and-Yellow Barbet *
 Fairly common resident usually in more open areas than *T. darnaudii*. Also occurs in the more open parts of riverine vegetation.

Indicatoridae Honey-Guides

606 *Indicator variegatus* Scaly-throated Honey-Guide
 2 along the Voi River 12.3.71 (CS). Formerly in the Voi River forest (AFW).

605 *Indicator indicator* Black-throated (or Greater) Honey-Guide *
 Rare in thick habitats south of the Galana River. Considerably commoner in parts of the northern area. Fledgling seen being fed by *Merops s. superciliosus* (q.v.).

608 *Indicator minor* Lesser Honey-Guide
 Rare in woodland and riverine vegetation. Most often seen during the rains. Formerly often heard in the Voi River forest (AFW) and up to 1972 (CS).

Picidae Woodpeckers

619 *Campetherina nubica* Nubian Woodpecker +
 Common resident. The commonest woodpecker occurring wherever there are trees. May also occur in treeless areas where there are many dead stumps.

623 *Dendropicos fuscescens* Cardinal Woodpecker
 Fairly common resident in most areas though prefers the presence of trees.

629 *Thripias namaquus* Bearded Woodpecker
 Rare resident in areas with large trees.

Alaudidae Larks

654 *Mirafra cantillans* Singing Bush-Lark +
 Fairly common partial migrant in grassland. Commoner in the rains and only obvious when singing.

— *Mirafra pulpa* Friedmann's Bush-Lark
 Uncommon visitor to well-grassed areas with a few bushes in the rains, especially December-January (see Lack 1977).

657 *Mirafra hypermetra* Red-winged Bush-Lark +
 Very common resident, almost restricted to open grassland.

660 *Mirafrla rufocinnamomea* Flaplet Lark
2 near Sobo 21.7.71 (CS); 1 near Mtito Andei 26.4.76 (PL); has been heard near Maungu (AFW).

665 *Mirafrla poecilosterna* Pink-breasted Lark *
The commonest and most widespread resident lark occurring everywhere except woodland where there are thick bushes underneath and riverine forest.

682 *Eremopterix leucopareia* Fischer's Sparrow-Lark
Formerly fairly common around Aruba and along the Nairobi-Mombasa road in the early 1960s (D.A. Turner). No recent records. Has evidently been replaced by *E. signata*.

681 *Eremopterix signata* Chestnut-headed Sparrow-Lark *
Common partial migrant being commoner in and soon after the rains. Often seen in pairs during the rains though in flocks at other times. Occurs mainly in more open areas.

679 *Eremopterix leucotis* Chestnut-backed Sparrow-Lark
Uncommon visitor in flocks (usually small) to open grassy habitats soon after rain.

Hirundinidae Swallows, Martins

1068 *Riparia riparia* European Sand Martin
A few records each autumn, September-early January, mostly from Aruba.

1070 *Riparia cincta* Banded Martin
2 at Aruba 22.11.75 (E. Bengtsson).

1054 *Hirundo rustica* European Swallow
Appears in very large numbers when the short rains start and then becomes progressively scarcer till they have all left in early May. A few occur before November, the earliest being 12.8.76 (PL).

1061 *Hirundo smithii* Wire-tailed Swallow
Resident in small numbers in the vicinity of water.

1063 *Hirundo senegalensis* Mosque Swallow
Has been seen near Manyani (AFW). (At least 2 were seen at Mtito Andei 23.4.77 (WP).)

1062 *Hirundo daurica* Red-rumped Swallow *
Uncommon resident around culverts, and sometimes buildings.

1065 *Hirundo abyssinica* Striped Swallow *
Common resident around its nest sites on buildings, with a few in culverts.

1073 *Hirundo fuligula* African Rock Martin *
Fairly common resident around rocky hills.

1074 *Delichon urbica* House Martin
A few are seen most winters from late November-early May.

Motacillidae Wagtails, Pipits

Some of 695-701 *Motacilla flava* ssp. Yellow Wagtail subspecies
Uncommon but regular visitor in small numbers to short grass areas, especially Aruba, November-early May. Which race or races are involved is unknown.

694 *Motacilla cinerea* Grey Wagtail
1 at Aruba 19.2.71 (CS).

691 *Motacilla aguimp* African Pied Wagtail *
Fairly common resident near water especially the Galana River, and around buildings.

706 *Anthus novaeseelandiae* Richard's Pipit
Uncommon visitor, especially to Aruba, but also to other short grass areas November-April.

705 *Anthus leucophrys* Sandy Plain-backed Pipit
1 south of Aruba 27.1.71, a few at Aruba 27.3.71 (both CS); formerly occurred in very open areas (AFW).

708 *Anthus trivialis* Tree Pipit
Few at Aruba 27.3.71 and 1 there 7.11.71 (both CS); 7 at Ndololo 8.3.76 were probably this species (PL).

713 *Anthus cervinus* Red-throated Pipit
Sporadic visitor to Aruba and surroundings. Records December-March.

715 *Tmetothylacus tenellus* Golden Pipit *
Very common during and soon after the rains in all areas. May disappear entirely June-October.

720 *Macronyx aurantiigula* Pangani Longclaw *
Fairly common resident in open grassy areas.

Campephagidae Cuckoo-Shrikes

1081 *Campephaga flava* Black Cuckoo-Shrike
Rare, probably resident, mainly in woodland and riverine forest; is relatively common in the Tiva River/Yatta Plateau area.

Pycnonotidae Bulbuls

743 *Pycnonotus barbatus dodsoni* White-eared Bulbul *
Common resident in thicker habitats especially woodland.

773 *Andropadus importunus* Zanzibar Sombre Greenbul *
Common resident in woodland and riverine forest.

769 *Chlorocichla flaviventris* Yellow-bellied Greenbul
Recorded along the Voi River (AFW,CS).

754 *Phyllastrephus strepitans* Northern Brownbul *
 Fairly common resident in woodland and along watercourses; always in thick bushes.

1148 *Nicator chloris* Nicator
 Rare, probably resident, in the thickest parts of woodland. Only noticeable when singing in the rains.

Laniidae Shrikes

1097 *Eurocephalus rueppelli* White-crowned Shrike *
 Common resident wherever there are trees.

1090 *Prionops plumata* Straight-crested Helmet-Shrike +
 Fairly common resident in woodland and slightly less so in other thick habitats. Not in riverine vegetation.

1095 *Prionops retzii* Retz's Red-billed Shrike *
 Fairly common resident in riverine vegetation.

1098 *Nilaus afer* Northern Brubru *
 Fairly common resident in open areas with trees.

1130 *Dryoscopus pringlii* Pringle's Puff-back
 Rare, probably resident, in woodland near Voi and on the northern boundary of the Park. Fairly common near Nثارakanā in wooded bushland.

1128 *Dryoscopus cubla* Black-backed Puff-back +
 Fairly common resident along the Voi and Tiva Rivers.

1135 *Tchagra jamesi* Three-streaked Bush-Shrike
 Fairly common resident in thick habitats.

1134 *Tchagra australis* Brown-headed Bush-Shrike
 1 on Voi River 15.12.76 (WP); 1 possible at Ndololo 9.4.76 (PL).

1133 *Tchagra senegala* Black-headed Bush-Shrike *
 Rare resident in very thick parts of woodland. 2 records along the Voi River and 1 at Gazi (PL).

1147 *Rhodophoneus cruentus* Rosy-patched Shrike *
 Common resident in bushy areas preferably without trees.

1126 *Laniarius ruficeps* Red-naped Bush-Shrike
 1 along the Mbololo River 19.8.72 (CS); seen once in woodland around Park HQ (AFW).

1125 *Laniarius aethiopicus* Tropical Boubou
 Rare in Voi River forest. Usually only heard and this mainly in the rains. A pair near Park HQ 23.8.70 (CS).

1121 *Laniarius funebris* Slate-coloured Boubou *
 Common resident in woodland and in dry watercourses but seems to be absent from the Voi River vegetation.

1138 *Malacorhynchus sulphureopectus* Sulphur-breasted Bush-Shrike
 Rare, probably resident, in woodland and riverine vegetation; occasional elsewhere. Most records are of birds heard in the rains. Formerly "not uncommon" (AFW).

1142 *Malacorhynchus quadrivirgatus* Four-coloured Bush-Shrike
 Formerly occurred rarely along the Voi River (AFW). No recent records.

1144 *Malacorhynchus blanchoti* Grey-headed Bush-Shrike
 Uncommon resident in woodland and riverine vegetation.

1112 *Lanius collurio collurio* Red-backed Shrike
 A small passage in autumn (late October-mid November), then in very small numbers through the winter but nearly completely replaces *L. c. isabellinus* during April in which month it is very common. Occurs in all habitats except very open grassland without dead stumps.

1114 *Lanius collurio isabellinus* Red-tailed Shrike
 Very common winter resident arriving about two weeks after *L. c. collurio* in November and staying till early April. Habitat as above and see above.

1103 *Lanius minor* Lesser Grey Shrike
 Fairly common migrant extreme end of March-early May (18.5.71 is the latest (CS)), occurring mainly in the more open habitats. Also 1 about 10 km south of Aruba 15.10.71 (CS).

1108 *Lanius cabanisi* Long-tailed Fiscal *
 Uncommon resident. Repalces *L. dorsalis* in some slightly damper areas e.g. along the Voi River.

1107 *Lanius dorsalis* Taita Fiscal *
 Very common resident in open areas but occurs in all habitats except woodland and riverine vegetation.

Muscicapidae Thrushes, Chats, Chatterers, Warblers, Flycatchers

883 *Saxicola rubetra* Whinchat
 1 at Kanderi 10.12.74 (PL).

854 *Oenanthe oenanthe* Wheatear
 Common migrant late September-October and fairly common April. A few are winter residents and 2 individuals were recorded several times May-June 1976 and 1 on 21.7.75 (PL). Prefers open habitats.

859 *Oenanthe pleschanka* Pied Wheatear
 Fairly common migrant October-November. Regular but not common thereafter till April. Occurs in thicker habitats than other *Oenanthe* species, but not in woodland.

855 *Oenanthe isabellina* Isabelline Wheatear
 Common winter migrant late October-April in more open areas.

868 *Oenanthe pileata* Capped Wheatear
 Uncommon visitor to very open areas especially March-June. Odd records January-August.

871 *Cercomela familiaris* Red-tailed Chat
1 at Park HQ 30.3.72 (CS).

876 *Myrmecocichla cinnamomeiventris* Cliff-Chat
1 male was periodically recorded at Voi Safari Lodge 1970-1975; 1 at Maungu 31.12.70 (CS). Formerly a pair above Park HQ (AFW).

850 *Monticola saxatilis* Rock Thrush
Common winter migrant October-April in the more open areas.

934 *Cercotrichas galactotes* Rufous Warbler
Common winter migrant occurring wherever there are thick bushes November-mid April.

911 *Cercotrichas leucophrys* White-winged Scrub-Robin *
Common resident in all thick habitats except riverine vegetation.

913 *Cercotrichas quadrivirgata* Eastern Bearded Scrub-Robin
Formerly occurred along rivers (AFW). No recent records.

909 *Cichladusa guttata* Spotted Morning Warbler *
Rare resident in woodland. Formerly common especially along riverbeds (AFW).

884 *Cossypha heuglini* White-browed Robin-Chat
Formerly regular, especially along the Voi and Galana Rivers (AFW). No recent records.

848 *Neocossyphus rufus* Red-tailed Ant-Thrush
Has been seen once or twice along the Voi River (AFW). No recent records.

921 *Luscinia megarhynchos* Nightingale
Very few positive records. All in riverine vegetation March-April but it may well be more widespread. Neither of 2 caught and ringed was *L. m. hafizi*.

922 *Luscinia luscinia* Sprosser
Fairly common passage migrant October-December and April to thick habitats especially riverine.

920 *Irania gutturalis* White-throated Robin
Fairly common winter visitor in thick habitats November-April especially December-January.

843 *Turdus tephronotus* Bare-eyed Thrush
Common resident in woodland. Rare in other thick habitats and then mainly in the northern area.

732 *Turdoides rubiginosus* Rufous Chatterer *
Rare in thick bushes along rivers. Also in woodland but is much rarer there than *T. aylmeri*.

733 *Turdoides aylmeri* Scaly Chatterer *
Uncommon resident in very thick bushes mostly in woodland.

940 *Locustella fluviatilis* River Warbler
1 caught and ringed in woodland near Voi 31.3.75 (PL) (see Lack 1975a); 1 near Voi Gate 25-29.12.76 (PL & D. Schmidl).

947 *Acrocephalus schoenobaenus* Sedge Warbler
Rare migrant mid April-early May, usually near to water in reedy margins; 1 at Voi Safari Lodge 5.1.75 (PL).

945 *Acrocephalus palustris* Marsh Warbler
Fairly common migrant November-December and more rarely in April. Prefers areas with trees.

944 *Acrocephalus scirpaceus* Reed Warbler
1 probable (with *A. palustris* nearby) at Aruba 13-18.12.76 (WP).

942 *Acrocephalus arundinaceus arundinaceus* Great Reed Warbler
3 caught and ringed at Ndololo 19.4.76 (PL).

943 *Acrocephalus arundinaceus griseus* Basra Reed Warbler
Occasional migrant to thicker areas. Records in December (several seen) and April (1 caught and ringed near Voi 13.4.76 (PL)).

955 *Acrocephalus gracilirostris* Greater Swamp Warbler
Formerly occurred in swamps (AFW). No recent records.

1051 *Sphenoeacus mentalis* Moustache Warbler
Has occurred in rank grass (AFW). No recent records.

936 *Hippolais olivetorum* Olive-Tree Warbler
1 at Park HQ 17.1.71 (CS); 1 at Voi Safari Lodge 7.3.75 (B.S. Meadows); 1 probable near Irima 4.11.75 (PL); 1 on Galana Ranch 13.11.76 (PL); 1 at Aruba 13-18.12.76 (WP).

937 *Hippolais languida* Upcher's Warbler
Fairly common winter migrant especially January-April in bushy areas, and fairly common in woodland.

938 *Hippolais pallida* Olivaceous Warbler
Common winter migrant to areas with trees November-April; especially common in woodland and riverine vegetation.

933 *Sylvia nisoria* Barred Warbler
Fairly common migrant November-April in thick bushes even where these are in fairly open areas.

925 *Sylvia borin* Garden Warbler
Uncertain status. Certainly occurs fairly regularly mainly in thicker areas December-April.

924 *Sylvia communis* Whitethroat
Common migrant in bushes November-January and April; a few remain all through the winter.

959 *Phylloscopus trochilus* Willow Warbler
Common migrant to any area with trees October-November and March-April; only very few remain December-February.

1024 *Cisticola chiniana* Rattling Cisticola
Rare, probably resident. Records from around Voi (several), Irima and the Mbololo River.

1033 *Cisticola galactotes* Winding Cisticola
Rare visitor to rank grass in damper areas (e.g. Aruba and parts of the Voi River) during the rains.

1042 *Cisticola cinereola* Ashy Cisticola *
Fairly common resident in grassland and open bushed grassland.

1041 *Cisticola nana* Tiny Cisticola +
Uncommon resident in the more open parts of woodland. Also seen regularly in one or two isolated areas with large trees e.g. near Voi Gate and a part of Maungu Plains.

1018 *Cisticola aridula* Desert Cisticola
Rare in open grassland. Most records are in the rains but this may be simply that it is more obvious then.

1045 *Prinia subflava* Tawny-flanked Prinia
2 along the Voi River 11.11.71 (CS); 3 at Gazi 11.8.75 (PL).

1046 *Prinia somalica* Pale Prinia
Seen once north of Sala (AFW).

979 *Apalis flavida* Black-breasted Apalis
Rare in woodland, and other thick bush in the northern area. Probably resident but all PL's records (10) May-October. Formerly fairly common (AFW).

987 *Spiloptila ruifrons* Red-faced Apalis
Rare resident in thick bushland. Formerly fairly common (AFW).

995 *Phyllolais pulchella* Buff-bellied Warbler
Formerly "not uncommon" in the tops of larger *Acacia* trees (AFW). No recent records.

1011 *Camaroptera brevicaudata* Grey-backed Camaroptera
Occasional in woodland and riverine forest.

968 *Camaroptera simplex* Grey Wren Warbler +
Fairly common resident in all thick habitats.

1004 *Eremomela flavirrissalis* Yellow-vented Eremomela *
Uncommon resident in the more open parts of woodland. Rare in other thick habitats.

996 *Sylvietta brachyura* Crombec *
Fairly common resident, especially in woodland.

999 *Sylvietta isabellina* Somali Long-billed Crombec *
A pair with eggs near Park HQ 7.6.72 (CS); 1 along the Mbololo River 15.4.75 (PL). Formerly "not uncommon" (AFW).

787 *Parisoma Boehmi* Banded Tit-Flycatcher
1 in *Acacia tortilis* woodland 30 km north-east of Aruba 21.6.76 (PL). Formerly uncommon in large *Acacia* trees (AFW).

778 *Muscicapa striata* Spotted Flycatcher
Fairly common late October-mid April in thicker habitats, especially riverine vegetation.

785 *Muscicapa caerulescens* Ashy Flycatcher
1 at Ndololo 24.9.71 (S. Keith per WL); 1 at Ndololo 17.4.76 (PL).

788 *Myioparus plumbeus* Grey Tit-Flycatcher
1 at Ndololo 12.5.75 and 29.9.75 (PL). Formerly fairly common along the Voi River (AFW).

799 *Melaenornis pammelaina* South African Black Flycatcher
Few near Park HQ August 1970, 1 by Mbololo River 19.8.70 (both CS).

793 *Bradornis microrhynchus* Grey Flycatcher +
Uncommon resident in thicker habitats. Formerly common (AFW).

792 *Bradornis pallidus* Pale Flycatcher
Present status uncertain. PL thought all *Bradornis* spp. that he saw were *B. microrhynchus* and did see *B. pallidus* in the Taita Hills. However, AFW certainly saw this species formerly and CS and J. Squire have both seen it in the Tsavo area in the last 5 years.

817 *Batis molitor* Chin-spot Puff-back Flycatcher *
Fairly common resident in woodland. Rare elsewhere.

819 *Batis perkeo* Pigmy Puff-back Flycatcher
Uncommon resident in thicker habitats especially in the northern area.

820 *Batis minor* Black-headed Puff-back Flycatcher
Uncommon resident in riverine vegetation. Rare elsewhere though regular at Voi Safari Lodge.

832 *Terpsiphone viridis* Paradise Flycatcher *
Uncommon visitor to thicker habitats especially woodland, riverine vegetation and gardens mostly in the rains.

Paridae Tits

1151 *Parus afer* Grey Tit
Rare resident in thicker habitats, especially woodland in the northern area.

1155 *Parus albiventris* White-breasted Tit
Occurred regularly around Park HQ 1969-1972 (WL, CS). Only 3 records (all near Park HQ) in 1975-1976 (PL).

1161 *Anthoscopus musculus* Mouse-coloured Penduline Tit
Rare resident in thick habitats especially in the northern area.

Nectariniidae Sunbirds

1274b *Anthreptes orientalis* Violet-backed Sunbird +

Uncommon resident especially in woodland though also in other thick habitats. Fairly common along the Tiva but not the Galana or Voi Rivers.

1271 *Anthreptes collaris* Collared Sunbird
Uncommon resident along rivers and around Park HQ.

1269 *Nectarinia olivacea* Olive Sunbird
Formerly in the Voi River forest (AFW). No recent records.

1261 *Nectarinia amethystina* Amethyst Sunbird *
Uncommon resident along rivers and in other damper places e.g. gardens. Also rare in woodland.

1264 *Nectarinia hunteri* Hunter's Sunbird *
Common resident in all habitats except open grassland.

1251 *Nectarinia venusta* Variable Sunbird
Formerly occurred around houses and along the Voi River (AFW). 1 at Ndololo 19.8.69 (WL).

1242 *Nectarinia bifasciata* (Tsavo) Purple-banded Sunbird
Fairly common resident in woodland. Rare in other thick habitats.

1245 *Nectarinia mariquensis* Mariqua Sunbird
Formerly "not uncommon" (AFW). No recent records.

1233 *Nectarinia pulchella* Beautiful Sunbird
Formerly fairly common in woodland (AFW). No recent records.

1234 *Nectarinia nectarinioides* Smaller Black-bellied Sunbird *
1 on Voi River 23.12.71 (CS); 1 there on each of 19.11.74, 9.12.75 and 9.12.76 (PL); 1 near Mtito Andei 23.11.75 (E. Bengtsson). Formerly common in woodland (AFW).

1230 *Nectarinia kilimensis* Bronzy Sunbird
1 probable at Voi Safari Lodge 13.12.76 (WP).

Zosteropidae White-eyes

1219c *Zosterops abyssinica* Yellow White-eye
Sporadic visitor to areas with large trees.

Emberizidae Buntings

(1469) *Emberiza flaviventris* Golden-breasted Bunting
2 collected near Tsavo River 4.4.34 (Peters & Loveridge 1937) are *E. poliopleura* (R.M. Paynter *in litt.*).
1470 *Emberiza poliopleura* Somali Golden-breasted Bunting *
Fairly common resident in areas with dense bushes.
1476 *Emberiza tahapisi* Cinnamon-breasted Rock-Bunting
Sporadic visitor usually fairly close to water; most records December-February.

Fringillidae Finches

1448 *Serinus mozambicus* Yellow-fronted Canary
1 probable on Voi Sisal Estate 14.3.76 (PL). Formerly occurred around the houses in the Park (AFW).
1459 *Serinus atrogularis* Yellow-rumped Seed-Eater
Rare in small flocks, usually near water or in gardens and may occur at any time.
1449 *Serinus dorsostriatus* White-bellied Canary
Rare in wooded and bushed grassland, occurring after rain. Formerly fairly common in woodland (AFW).
1452 *Serinus donaldsoni* Grosbeak Canary
2 about 15 km north of Aruba 26.6.72 (CS). Seen once in Voi (AFW).

Estrildidae Waxbills

1406 *Hypargos niveoguttatus* Peter's Twin-spot
1 by the Voi River 26.3.71 (CS).
1410 *Pytilia melba* Green-winged Pytilia (Melba Finch) +
Fairly common resident in all thicker habitats though rarely seen.
(1409) *Pytilia afra* Orange-winged Pytilia
Formerly seen at Voi (AFW).
1420 *Estrilda rhodopyga* Crimson-rumped Waxbill
Fairly common visitor to riverine vegetation and other damper areas December-March.
1418 *Estrilda astrild* Waxbill
2 by the Voi River 7.12.74 (PL) and formerly occurred there (AFW).
1427 *Estrilda erythronotus* Black-cheeked Waxbill
1 along Galana River 24.5.68 (WL); 1 near Voi 30.5.75 (PL & WL) and 13.1.76 (PL). Formerly common particularly along e.g. Mbololo River (AFW).
1433 *Uraeginthus ianthinogaster* Purple Grenadier
Rare resident in woodland and thick wooded bushland (e.g. on the Yatta Plateau). 1 by the Voi River 21.2.69 (WL).
1431 *Uraeginthus bengalus* Red-cheeked Cordon-Bleu +
Fairly common resident but restricted to riverine vegetation and gardens.
1432 *Uraeginthus cyanocephalus* Blue-capped Cordon-Bleu
Sporadic visitor usually singly or in pairs to thicker habitats.
1411 *Lagonosticta* sp. Firefinch species

Probably either *L. rhodopareia jamesoni* or *L. rubricata*. Rare visitor along the Voi River December-January and April.

1403 *Ortygospiza atricollis* Quail-Finch
1 near Irima 13.1.69 (WL).

1402 *Amadina fasciata* Cut-throat *
Fairly common visitor in variable numbers to the more open habitats mainly December-June.

1383 *Lonchura malabarica* Silver-bill +
Rare resident almost always near water. There was a small resident flock around Voi Safari Lodge in 1976.

1384 *Lonchura griseicapilla* Grey-headed Silver-bill
Uncommon in small flocks in any area mostly December-May.

1379 *Lonchura cucullata* Bronze Mannikin
Uncommon resident in riverine vegetation and especially around houses.

Ploceidae Weavers, Sparrows

1441 *Vidua macroura* Pin-tailed Whydah
Uncommon visitor especially to riverine vegetation during and soon after the rains.

1443 *Vidua Fischeri* Fischer's Whydah
Irregular sporadic visitor to any area with trees.

1442 *Vidua hypocherina* Steel-blue Whydah
Seen along the Tiva River in February 1969 (F. Alexander).

1444 *Vidua paradisaea* Paradise Whydah
Visitor in variable numbers mainly soon after the rains.

1434-40 *Hypochera* sp. Indigo-Bird species
Rare visitor to riverine vegetation in the rains.

1358 *Amblyospiza albifrons* Grosbeak Weaver
Formerly occurred in Voi swamp (AFW). No recent records.

1341 *Ploceus subaureus* Golden Weaver *
Uncommon visitor in the rains, usually to reed-beds e.g. in the Galana River near Sala.

1319 *Ploceus intermedius* Masked Weaver *
Fairly common visitor during the rains mainly to woodland and more rarely to other thick habitats. Nests are usually near water.

1321 *Ploceus velatus* Vitelline Masked Weaver +
Rare visitor mainly to woodland in the rains.

1313 *Ploceus cucullatus nigriceps* Layerd's Black-headed Weaver *
Fairly common visitor during the rains to the Voi area, especially November-January. Rare elsewhere and a few may remain all the year.

1327 *Ploceus rubiginosus* Chestnut Weaver *
Fairly common visitor to any habitat in both rainy seasons but especially December.

1337 *Ploceus ocularis* Spectacled Weaver
Formerly in the Voi River forest (AFW). No recent records.

1336 *Ploceus nigricollis* Black-necked Weaver *
Fairly common resident in woodland. In the northern area also in other thick habitats.

1359 *Malimbis rubriceps* Red-headed Weaver *
Rare resident in woodland and riverine vegetation and fairly common around Park HQ often nesting near or in buildings.

1360 *Quelea quelea* Red-billed Quelea *
Visitor, sometimes in huge flocks, to any area where there is grass seed, especially January-February but odd records all the year.

1373 *Euplectes albonotatus* White-winged Widow-Bird +
Visitor in small flocks to the Voi River area December-January.

1368 *Euplectes diadematus* Fire-fronted Bishop *
Common visitor to any grassy habitat during and shortly after the rains (commoner in December than in April). Not seen formerly (AFW).

(1365) *Euplectes hordeaceus* Black-winged Red Bishop
Appeared in some numbers in the central grasslands of Galana Ranch and along the Tiva River after the 1961 floods (I.S.C. Parker).

1364 *Euplectes nigroventris* Zanzibar Red Bishop *
Rare visitor to rivers mainly December-January.

(1405) *Anomalospiza imberbis* Parasitic Weaver
Seen once in Voi (AFW).

1285 *Bubalornis niger* Red-billed Buffalo-Weaver *
Common resident in most areas. Most obvious when around its nest trees in the early part of the rains.

1286 *Dinemellia dinemelli* White-headed Buffalo-Weaver *
Very common resident in all areas.

1287 *Plocepasser mahali* Stripe-breasted Sparrow-Weaver *
Common resident in riverine vegetation except forest. Also around buildings.

1291 *Pseudonigrita arnaudi* Grey-headed Social Weaver
Formerly occurred in small numbers (AFW). No recent records.

1292 *Pseudonigrita cabanisi* Black-capped Social Weaver +

Rare visitor in flocks to thicker habitats. All recent records are from the Manyani area.

1303 *Passer gongonensis* Parrot-billed Sparrow *
 Common resident in most wooded and bushed areas including riverine but is rare in woodland.

1308 *Petronia pyrgita* Yellow-spotted Petronia *
 Common resident in all habitats.

Sturnidae Starlings

1203 *Onychognathus morio* Redwing Starling
 A resident pair at Voi Safari Lodge. An influx occurred to a small area of woodland 5 km north of Voi August-September 1975 (PL). Occasional records from other rocky hills.

1188 *Lamproornis chalybaeus* Blue-eared Glossy Starling *
 Uncommon resident along rivers especially the Voi River. Occasional elsewhere.

1196 *Lamproornis purpuropterus* Ruppell's Long-tailed Glossy Starling
 Fairly common in the northern area especially along the Tiva River and is probably resident there. Sporadic visitor to the southern area where usually seen near the Galana River.

1184 *Cinnyricinclus leucogaster* Violet-backed Starling
 Sporadic visitor mainly to woodland late March-September; 1 on Galana Ranch in November (B.R. Heath).

1187 *Speculipastor bicolor* Magpie Starling
 Sporadic visitor in flocks to thicker habitats mostly in the northern area.

1211 *Spreo fischeri* Fischer's Starling +
 Fairly common resident preferring bushy areas.

1214 *Spreo hildebrandti* Hildebrandt's Starling
 Rare visitor to any area.

1215 *Spreo shelleyi* Shelley's Starling
 Uncommon visitor, often in flocks, mainly to the northern area. Sometimes occurs in large numbers e.g. a few hundred, mostly immatures, along the Mbololo River 4.2.71 (CS).

1216 *Spreo superbus* Superb Starling *
 Very common resident occurring mainly where there are trees. Occurs in larger flocks where the habitat is thicker.

1198 *Cosmopsarus regius* Golden-breasted Starling +
 Common resident preferring thicker habitats.

1182 *Creatophora cinerea* Wattled Starling *
 Visitor in variable numbers (flocks up to 200 noted) to any area mostly during the rains.

1218 *Buphagus erythrorhynchus* Red-billed Oxpecker *
 Common resident in all habitats.

Oriolidae Orioles

1164 *Oriolus oriolus* Golden Oriole
 Fairly common migrant October-November and April to any area with trees. A few stay through the winter.

1165 *Oriolus auratus* African Golden Oriole
 A specimen in the Education Centre at Voi dated 6.10.67; 1 at Ndololo 20.8.69 and 24.8.69 (WL); 1 by the Voi River 8.7.72 (CS).

1167 *Oriolus larvatus* Black-headed Oriole *
 Common resident in woodland and riverine vegetation. Uncommon in other areas with trees.

Dicruridae Drongos

1088 *Dicrurus adsimilis* Drongo *
 Very common resident wherever there are trees, however sparse.

Corvidae Crows

(1174 *Corvus splendens* Indian House Crow)
 (1 seen near Mtito Andei 20.3.77 (L. Campbell in National Museum Newsletter) and 23.4.77 (WP).)

1172 *Corvus albus* Pied Crow
 Fairly common resident in and around Voi town and along the Nairobi-Mombasa road but rarely inside the Park boundary.

1175 *Corvus albicollis* White-necked Raven *
 Common resident around Voi but not extending more than about 10 km into the Park.

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REFERENCES

BEESLEY, J.S.S. (1972). Birds of the Arusha National Park, Tanzania. *Jl. E. Africa nat. Hist. Soc. natn. Mus.* 132:1-30.

ELLIOTT, C.C.H. (1972). An ornithological survey of the Kidepo National Park, northern Uganda. *Jl. E. Africa nat. Hist. Soc. natn. Mus.* 129:1-31.

FORBES-WATSON, A.D. (1971). Skeleton check-list of East African birds. Nairobi (duplicated).

GREENWAY, P.J. (1969). A check-list of plants recorded in Tsavo National Park (East). *Jl. E. Africa nat. Hist. Soc. natn. Mus.* 27:169-209.

HALL, B.P. & MOREAU, R.E. (1970). An atlas of speciation in African passerine birds. London: British Museum.

LACK, P.C. (1975a). Some records of "less common Palaearctic migrants" in Tsavo East 1974-75. *EANHS Bull.* 1975:87-88.

LACK, P.C. (1975b). Range expansion of the Quail Plover. *EANHS Bull.* 1975:110.

LACK, P.C. (1976). The status of the Taita Falcon. *EANHS Bull.* 1976:103-104.

LACK, P.C. (1977). The status of Friedmann's Bush-Lark, *Mirafra pulpa*. *Scopus* 1:34-39.

LEUTHOLD, W. (1973a). Is the Somali Bee-Eater extending its range? *EANHS Bull.* 1973:101.

LEUTHOLD, W. (1973b). Less common Palaearctic migrants. *EANHS Bull.* 1973:111-112.

LEUTHOLD, W. (1974). Inland observations of the Terek Sandpiper. *EANHS Bull.* 1974:153.

LEUTHOLD, W. (1977a). Changes in tree populations of Tsavo East National Park, Kenya. *E. Afr. Wildl. J.* 15:61-69.

LEUTHOLD, W. (1977b). Notes on the breeding biology of the Ostrich *Struthio camelus* in Tsavo East National Park, Kenya. *Ibis* 119:541-544.

LEUTHOLD, W. (1977c). Spatial organisation and strategy of habitat utilisation of elephants in Tsavo East National Park, Kenya. *Z. Saugetierkunde* 42:358-379.

LEUTHOLD, W. & LEUTHOLD, B.M. (1974). Recent observations of migratory shore and water birds in Tsavo East National Park. *EANHS Bull.* 1974:72-74.

MACKWORTH-PRAED, C.W. & GRANT, C.H.B. (1957-60). African Handbook of birds. Series 1, 2 vols. 2nd ed. London: Longmans, Green & Co.

PEARSON, D.J. & BACKHURST, G.C. (1976). The southward migration of Palaeartic birds over Ngulia, Kenya. *Ibis* 118:78-105.

PETERS, J.L. & LOVERIDGE, A. (1937). Scientific results of an expedition to rainforest regions in eastern Africa. IV, Birds. *Bull. Mus. comp. Zool. Harvard* 79:128-205.

PRATT, D.J., GREENWAY, P.J. & Gwynne, M.D. (1966). A classification of East African rangeland with an appendix on terminology. *J. appl. Ecol.* 3:369-382.

SMEENK, C. (1974). Comparative-ecological studies of some East African birds of prey. *Ardea* 62:1-97.

SMEENK, C. & SMEENK-ENSERINK, N. (1976). Observations on the Pale Chanting Goshawk *Melierax poliopterus*, with comparative notes on the Gabar Goshawk *Micronisus gabar*. *Ardea* 63:93-115.

TREVOR, S. & LACK, P.C. (1976). Great Spotted Cuckoo parasitising Superb Starling. *EANHS Bull.* 1976:50.

TURNER, D.A. (1977) A new host for the Black-and-White Cuckoo, *Clamator jacobinus*. *Scopus* 1:51-52.

TYRELL, J.G. & COE, M.J. (1974). The rainfall regime of Tsavo National Park, Kenya and its phenological significance. *Journal of Biogeography* 1:187-192.

WHITE, C.M.N. (1965). A revised check-list of African non-passerine birds. Lusaka: Government Printer.

WILLIAMS, J.G. (1967). A field guide to the National Parks of East Africa. London: Collins.

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